ABSTRACT OF THE DISCLOSURE

[0089] A method of clustering communication nodes based on network attributes such as network delays and forwarding capacity; on communication interest attributes; and on application attributes such as quality of service preferences/constraints (e.g. end-to-end delay constraints, bandwidth constraints) in providing communications between users and application servers. A multi-attribute communication feature vector is formed. That vector is comprised of network attributes (such as available bandwidth, client location attributes in the IP map), communication interests attributes (client request for content updates, client subscription to specific data items or to a set of proximal data sources in network space or application/virtual space) and quality of service requirements (such as delay and loss constraints is used to from efficient group communication mechanisms for distributed collaborative applications. Then the multi-attribute communication feature vectors are clustered. The clustering methods for multi-type attribute feature vectors are: iterative clustering using a generalized distance space with normalized attribute subspace metrics; fusion clustering, and nested clustering.

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